UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

October 4, 2002

Reply To
Attn Of: ECL-113

Commander, Ft. Lewis *(sent via e-mail and regular mail)*
Directorate of Public Works
ATTN: AFZH-DEQ MS 17 (Mr. Eric Waehling)
Building 2012, Room 323
Ft. Lewis, WA 98433-9500

Subject: *Draft Work Plan for Sampling Firing Ranges, Demolition Areas 2 & 3, and Downgradient Groundwater, dated August, 2002*

Dear Eric:

Please find EPA's comments on the subject document enclosed. Please note that XRF comments are FYI only since this was eliminated in the most recent workplan. Let me know if you have any questions or concerns at (206) 553-1220.

Sincerely,

Sean Sheldrake, Project Manager

Enclosure

cc: Chris Maurer, Ecology
Ben Forson, Ecology

INTRODUCTION

At the request of EPA, Gannett Fleming, Incorporated (Gannett Fleming) reviewed the *Draft Work Plan for Sampling Firing Ranges, Demolition Areas 2 & 3, and Downgradient Groundwater,* prepared by Project Performance Corporation, for the Department fo the Army Headquarters, I Corps and Fort Lewis, Fort Lewis, Washington, and dated August 2002. Please note that both the August 30, 2002 and September 25, 2002 Drafts were reviewed as indicated in each section below.

Draft Statement of Work-September 24, 2002

1. Section 2.1.1, Page 3, First Paragraph. The description of necessary project personnel provided in the text should include the requirement of a Washington State Licensed Geologist and Hydrogeologist to certify appropriate designs and reports in accordance with Washington Administrative Code (WAC) regulations specified in Chapter 18.220 RCW; Chapter 308-15. JR

Work Plan for Analysis of Site Wide Groundwater-September 25, 2002

SPECIFIC COMMENTS

1. Figure 1-3, Page 5, Proposed monitoring well locations. The location proposed for drilling the groundwater monitoring locations is at the base boundary. The text should include discussion of how and why these particular sites were selected, and if any nearby well logs or land surface features were considered in choosing these sites. Also, please include the sequence in which the wells will be drilled. JR

2. Section 4.0, Page 13, First Paragraph/Second Item. The workplan proposes using one of the Demo Area 3 locations as a background well location for the site boundary well pairs. The text also states that this location will be downgradient of Demo Area 3. Former activities at Demo Area 3 may have impacted the groundwater quality at this location, however, making it unacceptable as a background location. In the opinion of Gannett Fleming, it would be preferable to locate the paired well installation upgradient of Demo Area 3 where the wells could provide shallow and deep aquifer background data for both for Demo Area 3 and the site boundary locations. JR

3. Section 4.0, Page 13, Third paragraph. The text states that “A round of potentiometric readings will be made across these wells....” The groundwater elevations should be measured several times during the first year of monitoring as well as at seasonal water level highs and lows to develop a complete picture of annual variations in the groundwater flow patterns. JR

4. Section 4.2, Page 15, Table 4-2. The list of Chemicals of Potential Concern should, in the opinion of Gannett Fleming, include pesticides and PCB analysis as well as those that are listed. The addition of these analytes will provide a more complete evaluation of

potential contaminants being sampled at the site boundary wells

5. Section 4.3, Page 17, First Paragraph. This portion of the text states that after one round of sampling COPC that are not detected above screening criteria in the first round of sampling will be dropped. In the opinion of Gannett Fleming, one sample analysis from a newly constructed monitoring well does not provide a high enough degree of assurance to begin deleting COPC from sampling and analysis programs. Several, (3 or 4 rounds) coinciding with seasonal high and low water levels over a year is generally required to begin deleting COPC from sampling and analysis programs. JR

6. Section 5.2, page 20, first Paragraph. The text describes the potential for exposure via groundwater to be an incomplete pathway as onsite shallow groundwater is not currently used. Groundwater, however, is used both on and downgradient of the site as drinking water. Due to the density of several of the contaminants of concern and the ability of high capacity wells to capture even shallow plumes in unconfined aquifers, groundwater, in the opinion of Gannett Fleming, is a potential pathway for exposure. JR

Sampling and Analysis Plan-Groundwater Well Installation and Groundwater Sampling-September 25, 2002.

1. Section 2.1, Page 1, First Paragraph. The text states that geologic samples will be "...collected on 5 ft. intervals,...". Lithologic samples should also be collected at formation breaks, at the direction of the geologist in charge of the drilling activities and continuously if drilling or sampling conditions warrant additional detail in the examination of the subsurface geologic conditions. JR

2. Section 2.1.2, Drilling Methods. If the auger rig is retained on site in order to attempt to drill the deep wells using that technique, the drilling contractor should also have an air rotary rig available to be mobilized onto site within a days notice to minimize delay to the deep well drilling program. The deeper wells may encounter boulders and/or the Troutdale formation which the hollow stem auger drilling rig will not penetrate. JR

3. Section 2.2.1, Page 5, The text states that centralizers will be installed above the screen on the deep wells only. In the opinion of Gannett Fleming, centralizers should also be added below the well screen on both the deep and the shallow well configurations. This will prevent the screen from settling to one side of the borehole providing a more uniform gravel pack thickness. JR

4. Section 2.3.3, Page 10. The text states that samples will be filtered in the field. Please do not filter samples in the field as metals may be lost in the filtering process. (AP)

5. Section 2.2.1, Page 6, Annular Seal. The text states that the annular seal will be of "...neat grout, bentonite cement grout or a high solids bentonite grout...". A neat grout mixture that will meet the percentage of solids required under WAC 173-160 guidelines for resource protection wells may not be liquid enough to move with a pump. The grout

specification should not include neat cement as an option. JR

6. Section 1.2.3, Well Development, Page 7, Third item. The text in this section of the SAP proposes using a centrifugal pump to perform development of the new wells. A preferred alternative would be to use a small diameter submersible pump such as the Grunfos Redi-Flow system. These pumps provide a means to pump water and fines from within the screened zone and to vary the flow rate considerably. The use of a submersible pump as opposed to the proposed method will provide superior development more efficiently (less purge water produced and drummed). JR

7. Section1.2.4.1, Page 8, First Sentence. The boring logs as well as the monitoring well design and final reporting must be performed by or under the supervision of a licensed Washington State Geologist and Hydrogeologist per Washington State regulations. JR

8. Section 2.3.1, Page 9, Fourth Paragraph. In the opinion of Gannett Fleming, the use of a vented cap on the completed well would alleviate the time requirement for atmospheric equilibration of the groundwater elevation and the necessity of two sets of waterlevel elevation measurements that may not provide comparable data. JR

9. Section 5.0, Well Construction Figure. The well construction figure provided in the text illustrates a below-ground-wellhead completion. Please provide an example of an above-ground -wellhead completion as this is the design configuration proposed in the text. JR

Sampling And Analysis Plan-SOIL-August 30, 2002

GENERAL COMMENTS

1. The text states that lead will be the only metal analyzed for at the Demolition Area. Since barium and cadmium are common contaminants at demolition areas, please explain why these contaminants are not analyzed for at this site. (AP)

SPECIFIC COMMENTS

1. Section 4.3, Page 7. This section describes how sample locations will be documented. Will sample locations be marked by a permanent stake at the collection site as well? (AP)

2. Section 4.4.4., Page 8. This section states “Results of the XRF feasibility study will be compared among the three analyses to determine if there is a correlation between XRF and laboratory determined concentrations and if there is sufficient benefit to warrant added sample preparation.” Please explain what is meant be “added sample preparation.” (AP)

3. Section 5.0, Second Paragraph, Page 8. This section states “Samples will be sent to the primary laboratory...” Did the author(s) intend to say that all samples will be sent to the primary laboratory, or only a percentage of samples? Please clarify the text. (AP)

4. Section 5.7, Page 13. Please define “Field Splits” and “Field Triplicates” in comparison to Field Duplicates. (AP)

5. Table 5-3, Page 14. The paragraph before this table states that “Split (same sample collected for analysis in the field and by primary laboratory) samples will be collected at a minimum frequency of 10 percent.” However, Table 5-3 indicates that only one Field Split sample will be collected, sample S192YMMDD0. Please include in the table the other three samples, for a total of four, that will be collected in order to meet the minium frequency of 10 percent Field Split collection for this sample table. (AP)

Also, The duplicate column under “ID For Field Analysis of Lead” needs to include one more duplicate sample for a total number of four as the total number of XRF Lead samples to be collected, according to this table, is 33 and the table only indicates that three duplicate samples will be collected. (AP)

Finally, please explain how the split sampling scheme (four laboratory samples per 10 XRF Lead samples) was determined. (AP)

Work Plan for Sampling Firing Ranges, Demolition Areas 2 and 3, and Downgradient Groundwater-August 30, 2002

SPECIFIC COMMENTS

1. Section 1.2.1., Third Paragraph, Page 3. This section states that samples will be collected to determine the bias of the XRF measurements that will be used site wide. As changes in soil type and instrument calibrations will effect the results of the XRF, determining the bias in the instrument for the entire site is not practical. Results of XRF measurements should not be adjusted based on a bias that is pre-determined. Instead, an acceptable level of error (such as an Relative Percent Difference (RPD) of 30%) should be noted in the text and verified by comparing the XRF to laboratory analysis. If the RPD is greater than the acceptable level of error for this project then only laboratory analysis should be used due to excessive error in the field method. (AP)

2. Section 1.2.1, Last Paragraph, Page 3. This section states that explosives, perchlorate and metals will be analyzed for this project. Please indicate why PETN is not included in the sampling list. (AP)

3. Section 1.2.1, Fourth Paragraph, Page 3. This section states that additional samples from the top inch of areas known to be free of releases will be included to establish background concentrations. Please make sure that background samples are collected up gradient from any known or suspected areas of contamination. Also, please include locations of proposed background locations on site maps for review. (AP)

Quality Assurance Project Plan-August 30, 2002

GENERAL COMMENTS

1. The sampling method for VOC's and SVOC's should specify that no mixing of the sample will take place before sample collection and that no head space will be left in the VOC sample vial. (AP)

2. In comparison to the "US EPA region 9 Guidance for Preparing Quality Assurance Project Plans for Superfund Remedial Projects," the QAPP is missing the following items:

- A signature page for the project manager, quality assurance officer, etc.;
- Document control information (specifying plan section, revision number, and date of revision);
- Data usage; decisions to be made for which data are needed, uses of data;
- Rational for analytical parameters;
- Project Schedule;
- Action levels or standards upon which decisions will be made (source or information cited).
- Acceptable level of confidence in data necessary for purpose of data;
- Individuals responsible for project management, overall quality assurance, organization responsible for laboratory analysis, individual responsible for data validation, etc.;
- Organizational chart;
- Chain-of-custody form;
- Analyte quantitation/detection limits;
- Action levels (are quantitation levels adequate?);

SPECIFIC COMMENTS

1. Table 5-1. Page 4. Please define "HPCL." Do you mean High Performance Liquid Chromatography or HPLC? (AP)

2. Table 5-1, Page 4. The table indicates that aqueous samples will be filtered in the field. If samples are filtered then non-filtered samples should also be provided to the laboratory in duplicate of all those that are filtered to determine if any metals are lost during the filtration process. (AP)

3. Table 6-1, Page 6. Since each laboratory methods to be used for this project is specified in this table, the continuing calibration criteria for the method should also be specified. (AP)

4. Table 7-1, Page 8. Please define "Field Split" and "Field Duplicate"in relation to both field and laboratory analyses. (AP)

5. Section 7.0, Paragraph "Field Blanks", Page 8. The last sentence of this paragraph is unclear to the reader. Please clarify the text.

6. Table 8-1, Page 10. The percent recovery for all analyses in the laboratory should be greater than 60%. Please correct the table. (AP)

7. Section 10, Page 15. The text states that ice will be used to keep samples cool. In the opinion of GF, blue ice or similar substances should be used that do not produce free liquid upon melting as laboratories may not accept sample coolers with free unknown liquids in them. (AP)

8. Section 11.3, Page 18. As EPA methods will be used for laboratory analyses, please use the same data qualifiers as found in the USEPA Contract Laboratory Program National Functional Guidelines (February 1994). (AP)